



**PUBLIC INFORMATION MEETING  
FOR THE  
CARRIER AIR CONDITIONING  
SUPERFUND SITE**

**AGENDA**

- Introduction and Welcome
- Superfund Process Overview
- Site Background and Remedial Investigation Summary
- Feasibility Study Results
- EPA's Recommended Alternative
- The Next Step
- Community Relations
- Question and Answer Period

**DATE:** Thursday, April 30, 1992

**TIME:** 7:00 p.m.

**LOCATION:**

Memphis/Shelby County  
Public Library  
91 Walnut Street  
Collierville, Tennessee



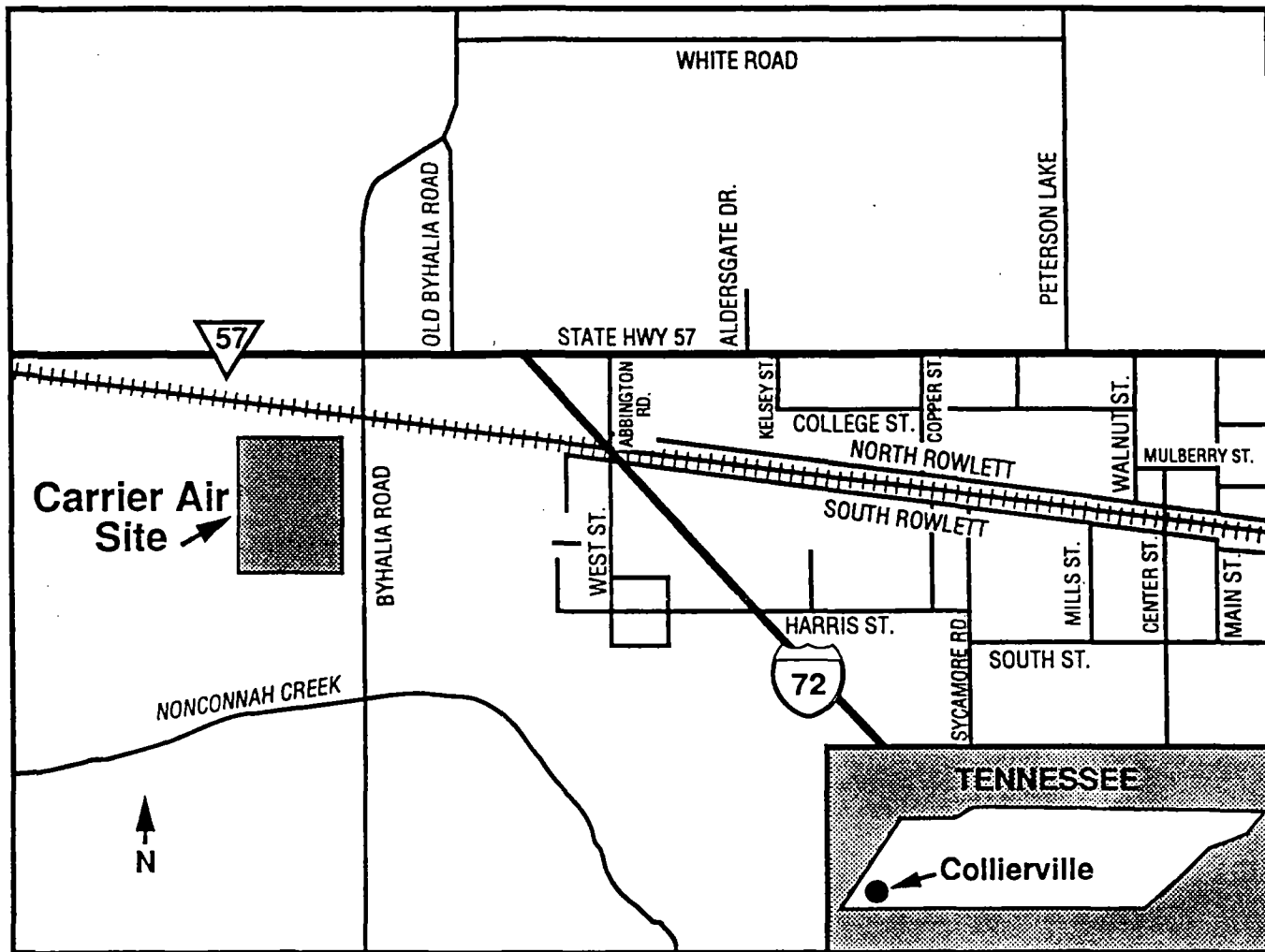
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## **ADMINISTRATIVE RECORD LOCATION**

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**Memphis/Shelby County Public Library  
91 Walnut Street  
Collierville, Tennessee 38017  
(901)853-3200**

# Carrier Air Conditioning Company Superfund Site Location Map Collierville, Tennessee



## SITE BACKGROUND

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- Carrier Air Conditioning has operated a residential heating and air conditioning manufacturing facility since 1971.
- Trichloroethylene (TCE) was used as the primary solvent to degrease and clean manufacturing parts.
- Two releases (in 1979 and 1985) of TCE occurred in the manufacturing plant building.
- In addition, a wastewater lagoon, operated from about 1972 to 1979, apparently accepted waste inadvertently contaminated with TCE and zinc.

## SITE BACKGROUND (cont'd)

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- Removal actions were conducted at the former lagoon and both near-plant spills.
- Since the 1985, groundwater monitoring wells were installed under the oversight of the Tennessee Department of Environment and Conservation (TDEC).
- In 1986, one of the extraction wells at the Town of Collierville's Water Plant 2 was found to be contaminated with low levels of TCE. Operation of the Water Plant 2 continued under frequent monitoring.

## SITE BACKGROUND (cont'd)

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- In 1987 and 1988, Carrier conducted a site investigation under an agreement with TDEC. Contamination was found in Site soils and groundwater.
- The Carrier Site was proposed on EPA's National Priorities List (NPL) in 1988 and became final in 1990.
- In 1990, due to increasing levels of TCE, but still below the Maximum Contaminant Levels (MCLs), air strippers were installed to assure removal of TCE from the drinking water supply.

## REMEDIAL INVESTIGATION

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EPA conducted a Remedial Investigation (RI) at the Site from 1990 to 1992 to:

- determine the nature and extent of contamination, and
- assess risk to human health and the environment.

## RI SAMPLING

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- 37 Groundwater Monitoring Wells
- 87 Surface Soil Samples
- 87 Subsurface Soil Samples
- 5 Surface Water Samples
- 5 Sediment Samples
- Air Monitoring

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3724 SUMMITTOWN DR. MEMPHIS, TN 38134 (901) 372-7542

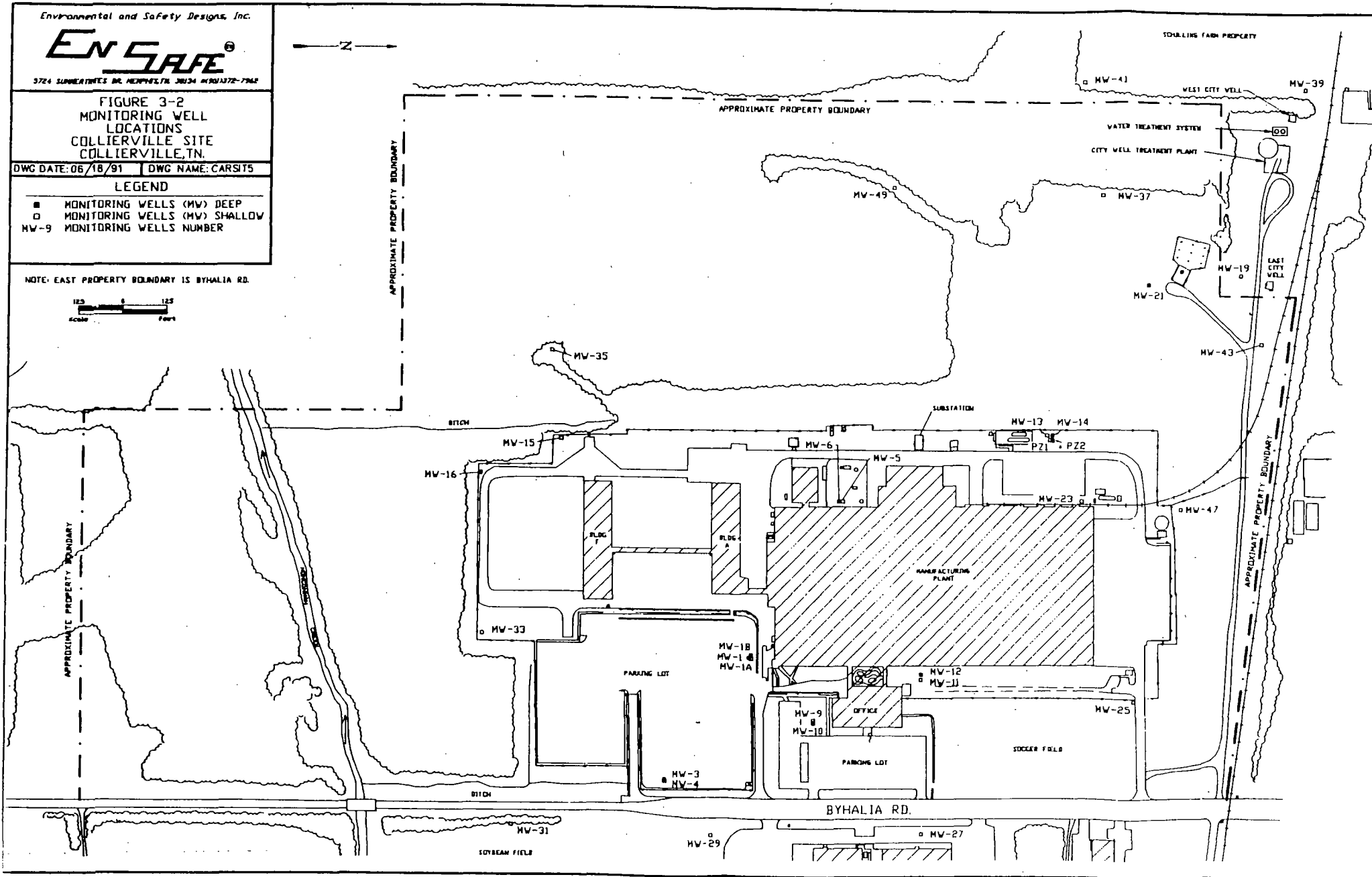
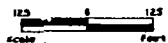
**FIGURE 3-2  
MONITORING WELL  
LOCATIONS  
COLLIERVILLE SITE  
COLLIERVILLE, TN.**

DWG DATE: 06/18/91 DWG NAME: CARST5

**LEGEND**

- MONITORING WELLS (MW) DEEP
- MONITORING WELLS (MW) SHALLOW
- MW-9 MONITORING WELLS NUMBER

NOTE: EAST PROPERTY BOUNDARY IS BYHALIA RD.



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FIGURE 3-1  
SOIL BORING  
LOCATIONS  
COLLIERVILLE SITE  
COLLIERVILLE, TN.

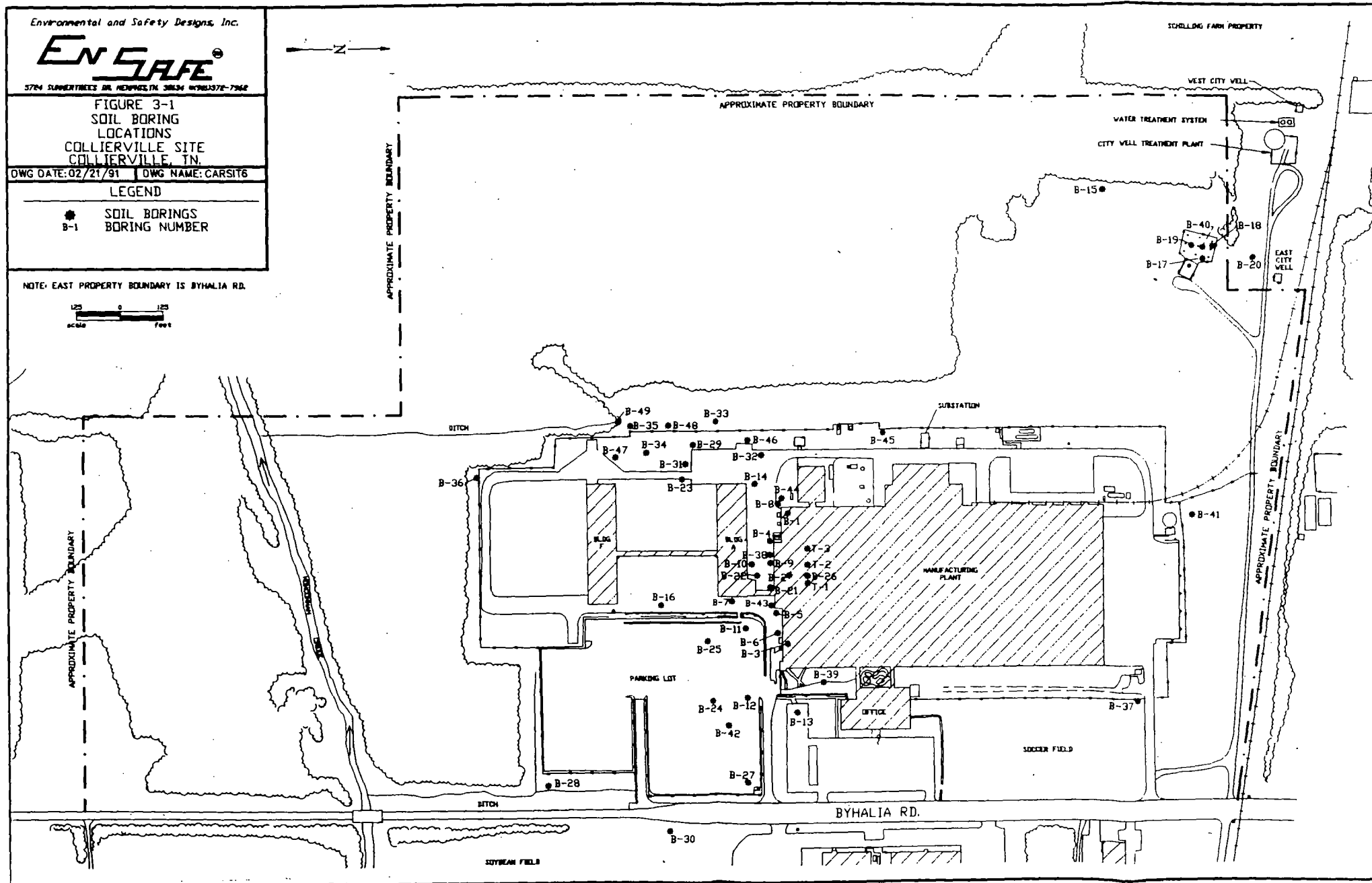
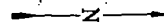
OWG DATE: 02/21/91 DWG NAME: CARST6

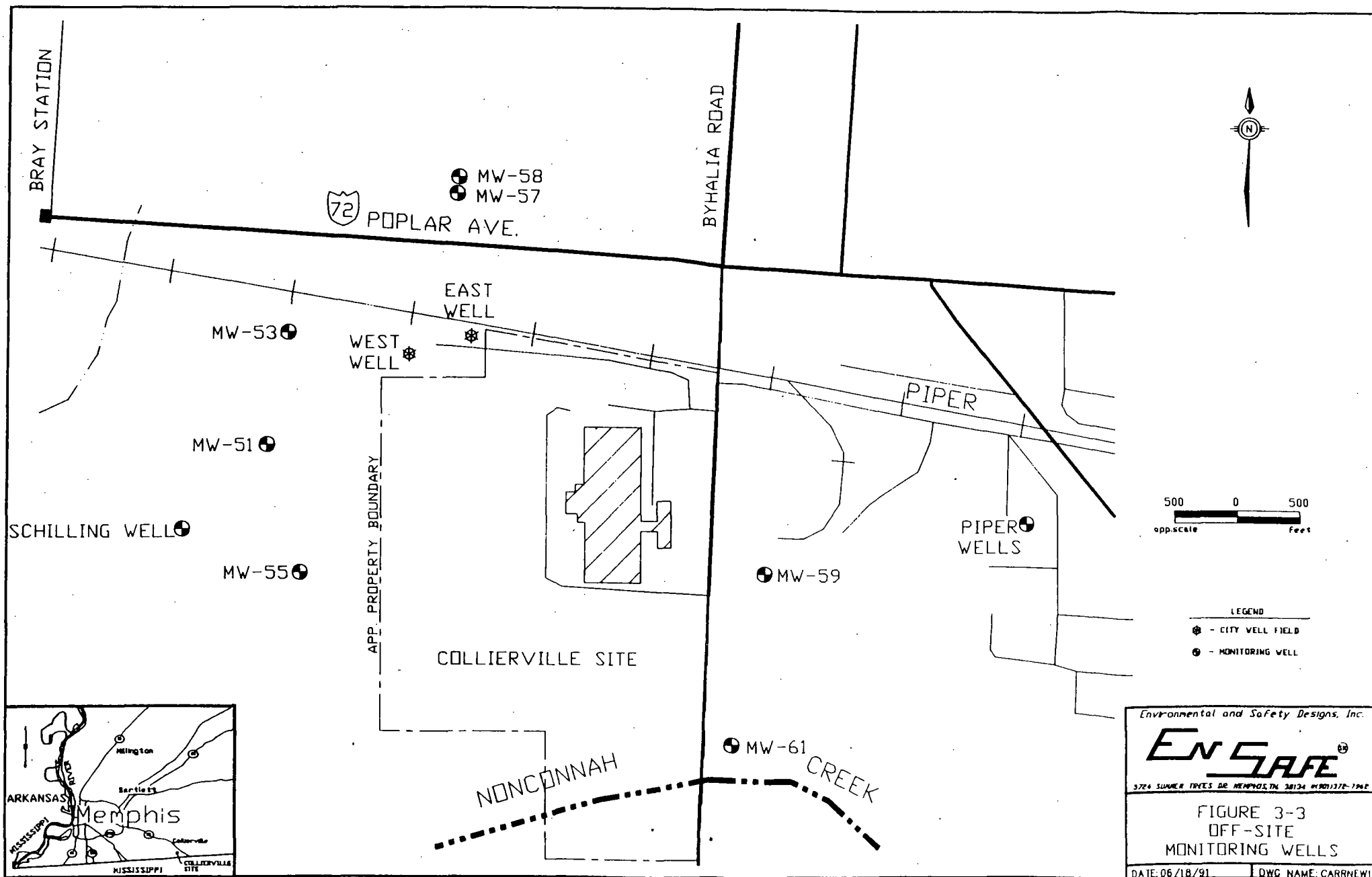
LEGEND

● SOIL BORINGS  
B-1 BORING NUMBER

NOTE: EAST PROPERTY BOUNDARY IS BYHALIA RD.

125 0 125  
scale feet





## RI FINDINGS

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- Contamination, primarily TCE, was found in both the shallow and deep aquifers at levels above the federally established Maximum Contaminant Levels (MCLs).
- Soil contamination was found in the 1979 and 1985 spill areas, and the lagoon area.
- Contamination migrates from soils to the shallow aquifer. Contaminated groundwater in the shallow aquifer migrates primarily towards the southeast and enters the deep aquifer (Memphis Sands) where the clay unit is absent.
- Surface water and sediment samples showed no contamination.

## RI FINDINGS (cont'd)

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- No release of TCE to the atmosphere was detected except when invasive activities, such as drilling, were being conducted.
- The contaminants of concern in site soils and groundwater are:

Trichloroethylene (TCE)	Vinyl Chloride
1,2 Dichloroethane (DCA)	Lead
1,2 Dichloroethylene (DCE)	Zinc
Tetrachloroethene (PCE)	

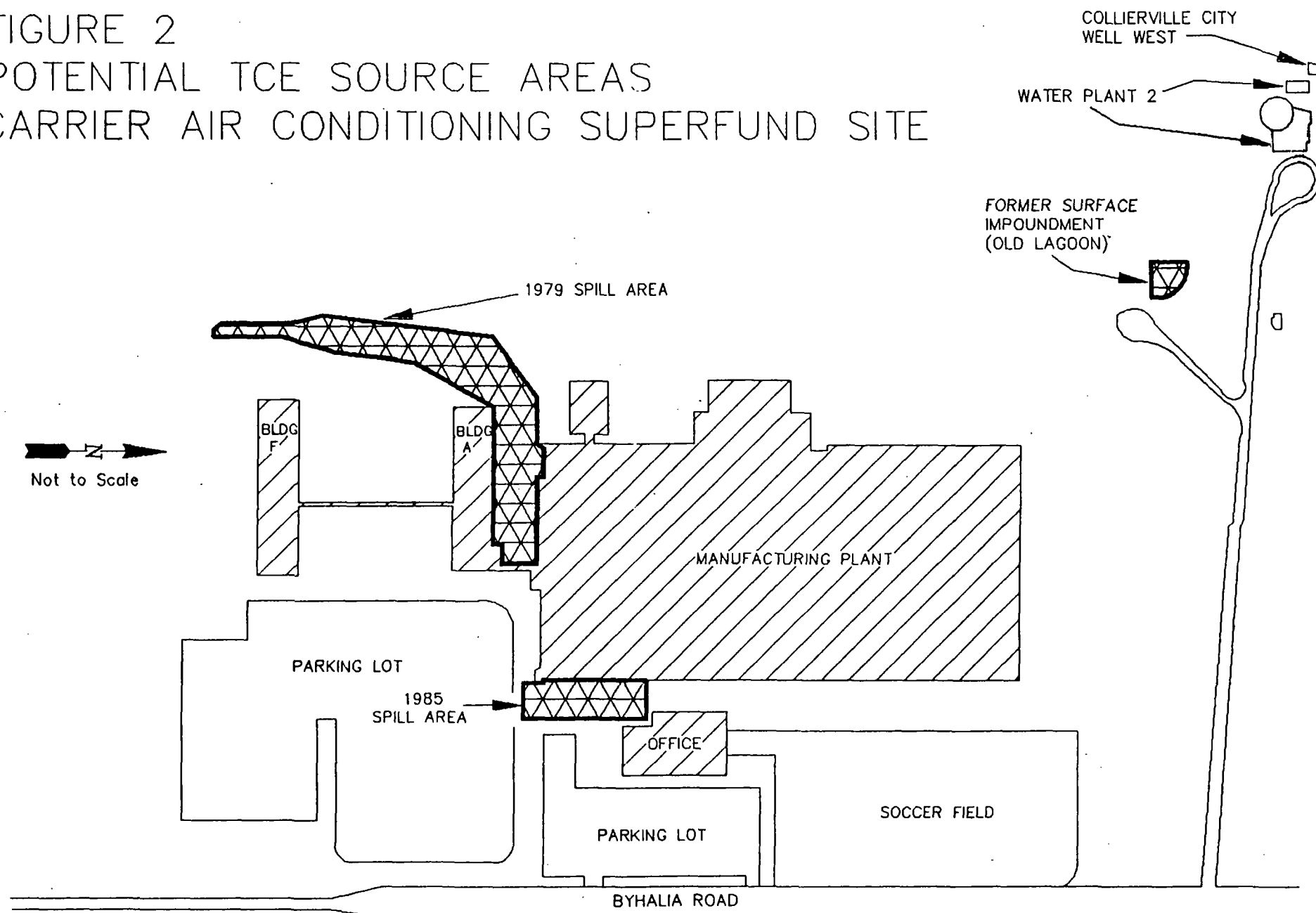
- As part of the RI, a treatability study was conducted at the former lagoon and has been effective in removing TCE and its natural degradation products.

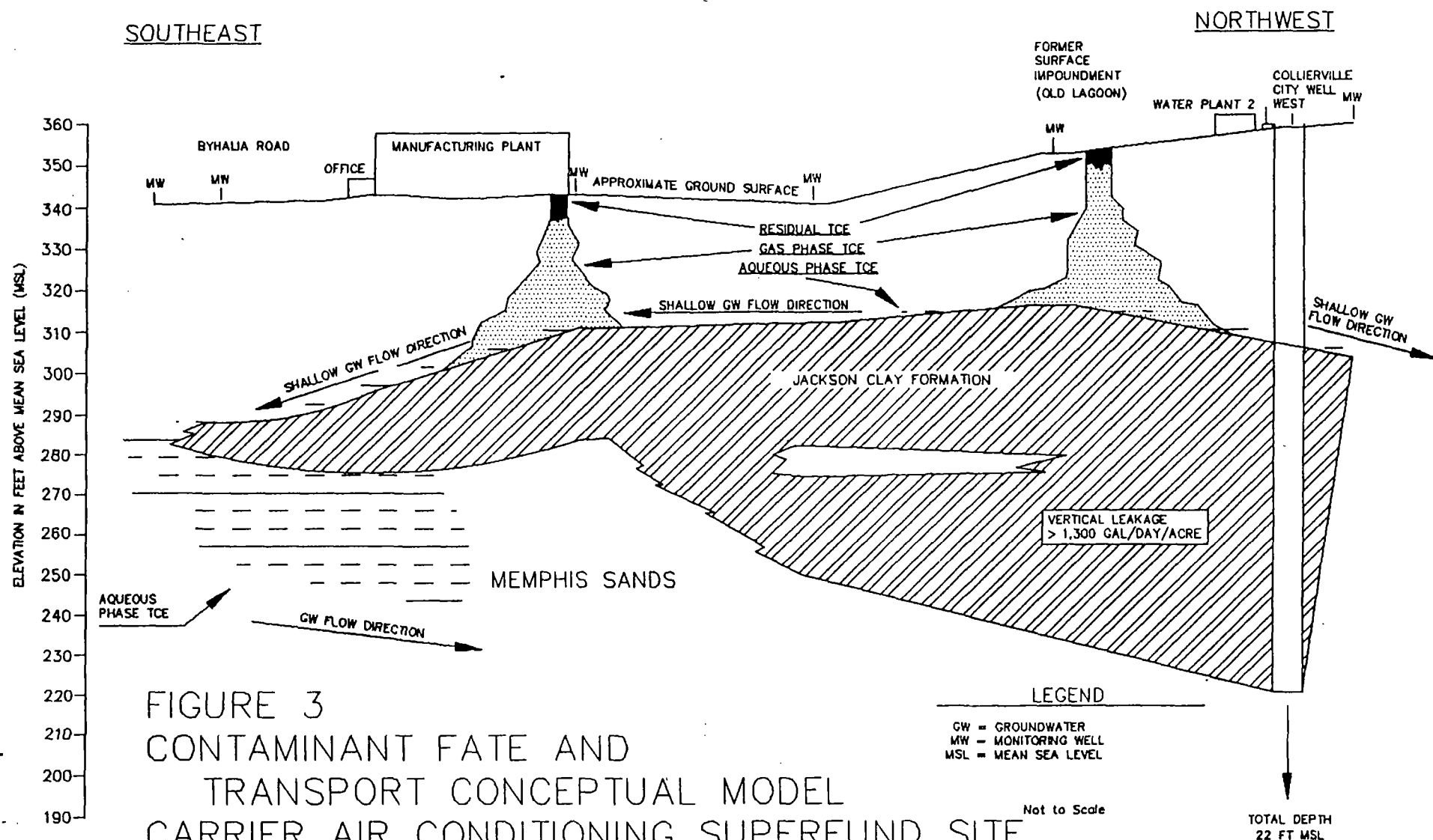
## RI CONCLUSIONS

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- Prevent ingestion of groundwater contaminated at or above federally established MCLs;
- Prevent further contamination of the Memphis Sands;
- Restore the Memphis Sands aquifer to drinking water conditions; and
- Prevent migration of contaminants from soils that cause groundwater to exceed MCLs.

FIGURE 2  
POTENTIAL TCE SOURCE AREAS  
CARRIER AIR CONDITIONING SUPERFUND SITE





## FEASIBILITY STUDY

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- A Feasibility Study (FS) was developed during the Spring of 1992 to develop and evaluate cleanup alternatives for the Site.
- Six possible alternatives were identified and each alternative was evaluated using eight of the nine evaluation criteria; the ninth criterion, community acceptance, is being evaluated during the public comment period.

## TECHNOLOGIES CONSIDERED

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- Groundwater Treatment
  - Ultraviolet Light-Enhanced Oxidation
  - Air Stripping
- Soil Treatment
  - Soil Vapor Extraction (SVE)
  - Low Temperature Thermal Desorption (LTTD)
- Air Treatment
  - Carbon Adsorption
  - Thermal Treatment
  - Ultraviolet Photolysis
- Disposal Actions
  - Groundwater Discharge
  - Hazardous Waste Disposal

## POSSIBLE REMEDIAL ALTERNATIVES

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- Alternative 1  
No Action
- Alternative 2  
North Remediation System  
Groundwater Containment/Treatment  
at Water Plant 2
- Alternative 3  
North Remediation System  
Soil Vapor Extraction in Main Plant Area  
Groundwater Containment/Treatment  
at Water Plant 2

## POSSIBLE REMEDIAL ALTERNATIVES (cont'd)

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- Alternative 4  
North Remediation System  
Soil Vapor Extraction in Main Plant Area  
Groundwater Containment/Treatment at  
Water Plant 2 and with Supplemental Wells  
Option 4A: Air Stripping  
Option 4B: Ultraviolet Oxidation
- Alternative 5  
Plant Area Soil Excavation  
Low Temperature Thermal Desorption  
North Remediation System  
Soil Vapor Extraction at Main Plant Area  
Groundwater Containment/Treatment at  
Water Plant 2

# POSSIBLE REMEDIAL ALTERNATIVES

## (cont'd)

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- Alternative 6
  - Plant Area Soil Excavation
  - Low Temperature Thermal Desorption
  - North Remediation System
  - Soil Vapor Extraction at Main Plant Area
  - Groundwater Containment/Treatment at
    - Water Plant 2 and with Supplemental Wells
  - 6A: Air Stripping
  - 6B: Ultraviolet Oxidation

## EPA'S RECOMMENDED ALTERNATIVE

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- Alternative 4A  
North Remediation System  
Soil Vapor Extraction at Main Plant  
Groundwater Containment/Treatment at  
Water Plant 2 and with Supplemental Wells  
(Air Stripping)
- The placement of institutional controls on land and water use on the Site and on water use in the general area.
- Periodic monitoring to assess the effectiveness of the remedy for at least the next 30 years.

## EPA'S RECOMMENDED ALTERNATIVE (cont'd)

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- Treated water from the extraction wells will be (1) utilized in the municipal water supply; (2) discharged to a local water supply; (3) discharged to surface water; or (4) reinjected to the Memphis Sands Aquifer.
- Air quality standards will be met using off-gas carbon adsorption, a fume incinerator, or ultraviolet photolysis should monitoring indicate air controls are necessary.
- Administrative requirements for air emission limitations, water quality discharge, reinjection requirements, and/or approval for off-site disposal of hazardous waste will be met. The specific needs will be determined during Remedial Design (RD).

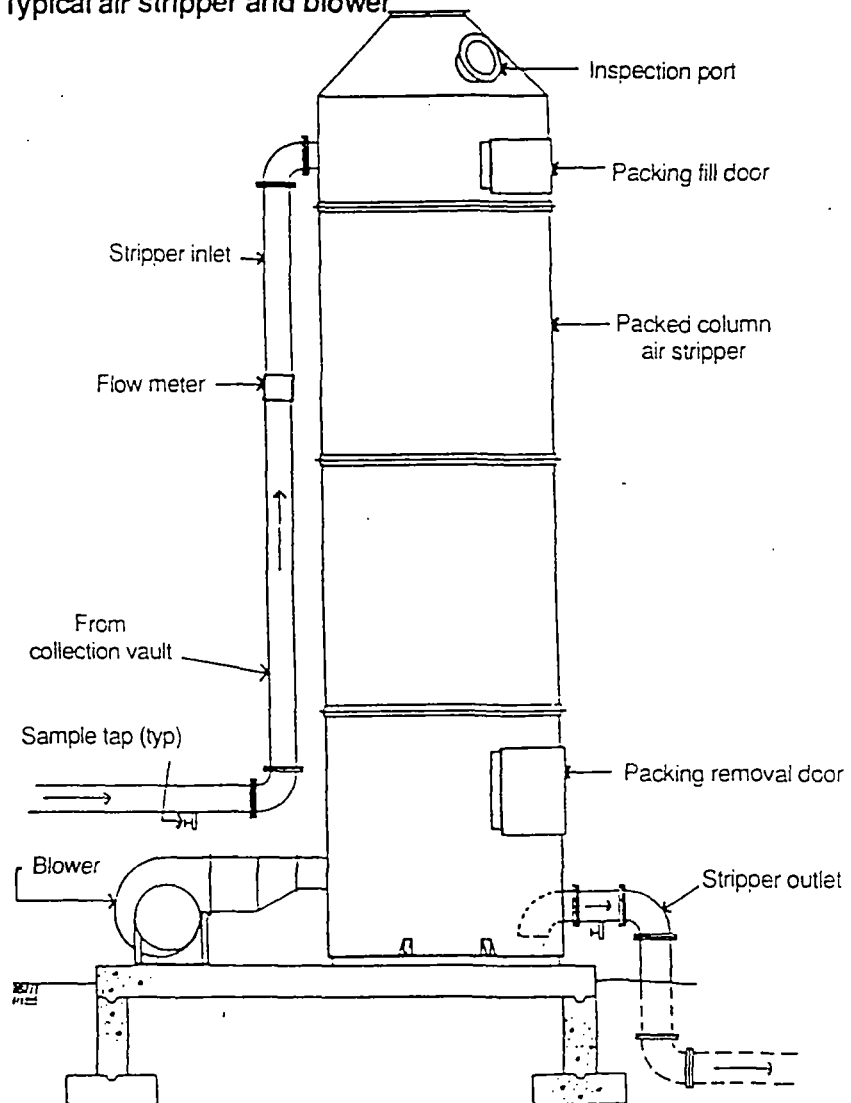
## EPA'S RECOMMENDED ALTERNATIVE (cont'd)

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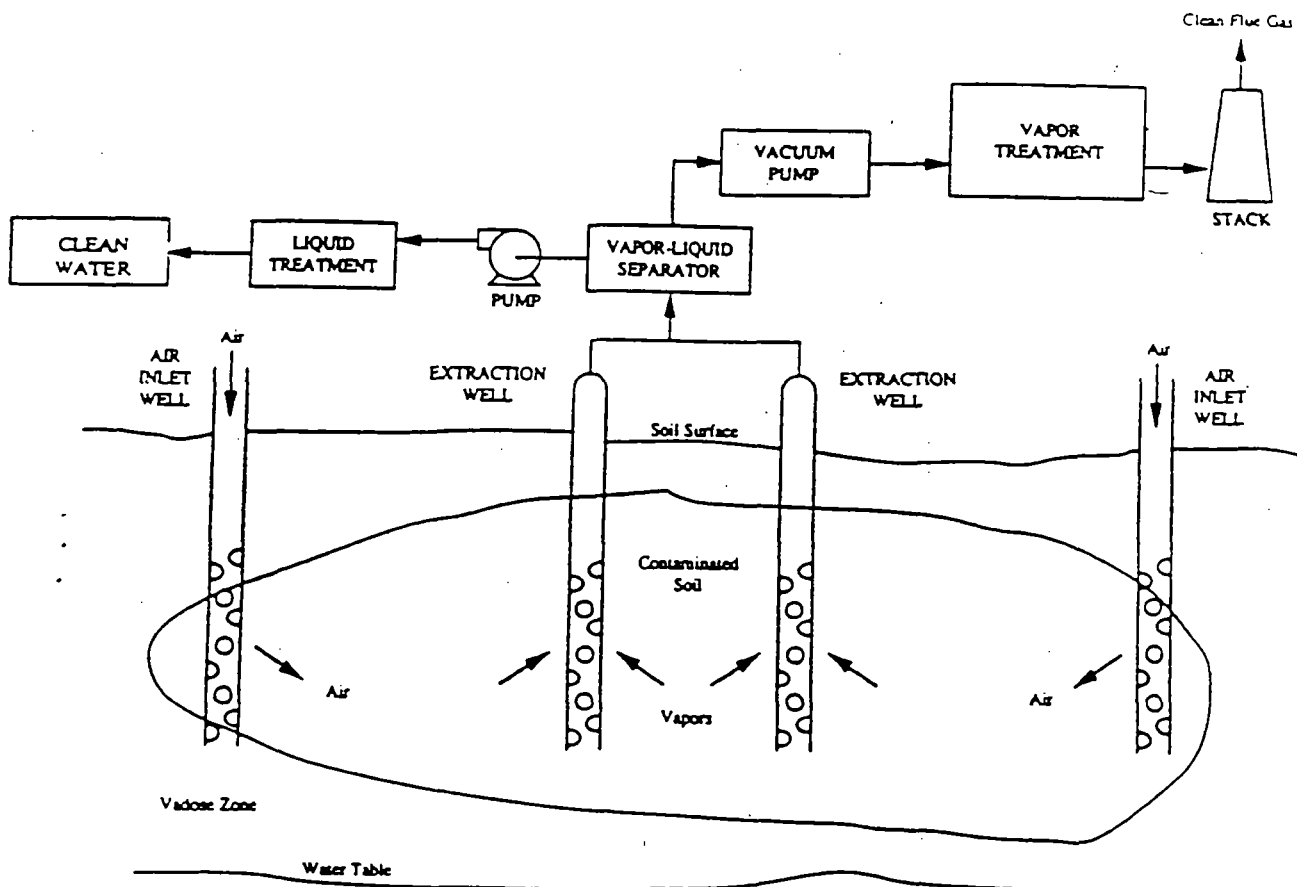
Alternative 4A is preferred for the following reasons:

1. Protective of human health and the environment.
2. Provides reliable protection over time with minimal risk during construction and implementation.
3. Ensures contamination does not migrate offsite and will minimize further contamination of the Memphis Sand Aquifer.
4. Utilizes a permanent solution.
5. Uses proven and widely available technologies that are easy to implement.
6. Reduces the toxicity, mobility, and volume of contaminated soil and groundwater through treatment.
7. Cost effective.
8. Satisfies EPA's preference for treatment as a principal element.

Typical air stripper and blower



## SOIL VAPOR EXTRACTION



## THE NEXT STEP

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- The public comment period ends on May 21, 1992.
- EPA will respond to the comments received and the responses will be summarized in a document called a responsiveness summary.
- EPA's final choice of a remedy will be documented in the Record of Decision (ROD) to be issued in August 1992.
- The ROD, which includes the responsiveness summary, will become part of the Administrative Record in the Information Repository.

## THE NEXT STEP (cont'd)

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- Remedial Design and Remedial Action (cleanup) negotiations should be complete by November 1993.
- The Remedial Action is anticipated to begin in November 1993.
- Time required to remediate soils: 3 - 5 years.  
Time required to remediate groundwater: < 30 years.

**FOR FURTHER INFORMATION ABOUT THIS SITE, CONTACT:**

Ms. Suzanne Durham  
Community Relations Coordinator  
U. S. Environmental Protection Agency  
345 Courtland Street, N. E.  
Atlanta, Georgia 30365  
404/347-7791

**QUESTIONS MAY ALSO BE DIRECTED TO:**

Ms. Beth Brown  
Remedial Project Manager  
U. S. EPA - Region IV  
345 Courtland Street, N. E.  
Atlanta, Georgia 30365  
404/347-7791

Mr. Jordan English  
TN Dept. of Environment & Conservation  
Superfund Division  
2500 Mt. Moriah  
Perimeter Park, Suite E-645  
Memphis, Tennessee 38115  
901/543-6695